

What is claimed is:

1. A coil-on-tube heat exchanger having a center tube for a first liquid flow, the heat exchanger comprising:

5 a plurality of coil tubes for a second liquid flow, the coil tubes helically wrapped in a parallel relationship along the length of the center tube, each of the plurality of coil tubes being in contact with the center tube and extending substantially along the same length of the center tube.

10 2. The heat exchanger of claim 1 wherein the first liquid flow and the second liquid flow are in opposite directions, so as to provide a counter-flow heat exchanger.

3. The heat exchanger of claim 1 wherein each of the plurality of coil tubes has an inlet end, the inlet ends of each of the plurality of coil tubes being co-located.

15 4. The heat exchanger of claim 1 wherein each of the plurality of coil tubes has an outlet end, the outlet ends of each of the plurality of coil tubes being co-located.

20 5. The heat exchanger of claim 1 wherein the plurality of coil tubes extend substantially along the entire length of the center tube.

6. The heat exchanger of claim 1 wherein the plurality of coil tubes are arranged in a helix such that there is minimum space between each of the plurality of coil tubes.

25 7. The heat exchanger of claim 1 wherein the plurality of coil tubes forms a first helix, the heat exchanger further comprising a second plurality of coil tubes for a third liquid flow, the second plurality of coil tubes helically wrapped in a parallel relationship along the length of the center tube to form a second helix, each of the second plurality of coil tubes being in contact with the center tube and extending substantially along the same length of the center tube, the second helix extending along a different length of the center tube than the first helix.

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8. The heat exchanger of claim 7 wherein the first helix and the second helix extend along substantially the entire length of the center tube.

5 9. The heat exchanger of claim 1 wherein each of the plurality of coil tubes has a substantially similar cross-sectional profile.

10 10. The heat exchanger of claim 1 wherein each of the plurality of coil tubes has a substantially rectangular cross-sectional profile.

10 11. The heat exchanger of claim 1 wherein each of the plurality of coil tubes has a substantially similar cross-sectional area.

12. The heat exchanger of claim 1 further comprising an inlet header for splitting flow to the plurality of coil tubes at an inlet end of the helix.

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13. The heat exchanges of claim 12 wherein the header splits incoming liquid flow into a plurality of parallel flows for travel along a substantially similar path around the helix in the plurality of coil tubes.

20 14. The heat exchanger of claim 1 further comprising an outlet header for mixing flow from the plurality of coil tubes at an outlet end of the helix.

15. The heat exchanger of claim 1 wherein the plurality of coil tubes are wrapped in a counter-clockwise direction around the center tube.

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16. The heat exchanger of claim 1 wherein the plurality of coil tubes are wrapped in a clockwise direction around the center tube.

17. The heat exchanger of claim 1 further comprising a plurality of anchors for anchoring the plurality of coil tubes to the center tube.

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18. The heat exchanger of claim 3 further comprising a plurality of anchors for anchoring the plurality of coil tubes to the center tube at the inlet end of each of the coil tubes.

19. The heat exchanger of claim 4 further comprising a plurality of anchors for anchoring
5 the plurality of coil tubes to the center tube at an outlet end of each of the coil tubes.

20. The heat exchanger of claim 1 wherein the first liquid flow is a drain water flow and the second liquid flow is a fresh water flow.

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